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hyperspectral issues for coastal zone environments

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Mapping the Invasive Species Chinese Tallow

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In a series of papers (see below), we described newly developed remote sensing tools to map the localized occurrences and regional distribution of the widespread and gregarious invasive species Chinese tallow (*Sapium sebiferum*). These developments relied on newly available Hyperion sensor hyperspectral data collected from the EO1 satellite platform. Because they were directed at mapping and monitoring tallow, remote sensing hyperspectral technologies advanced here have deficiencies that are at this time preventing widespread mapping of invasive plants in the United States and elsewhere. We expect methods developed as part of this project will provide a template for mapping and monitoring other invasive species within the native landscape in differing geographic areas.

High spatial resolution photography. Ramsey III, E., G. Nelson, S. Sapkota, E. Seeger, and K. Martella, 2002. Mapping Chinese tallow with color-infrared photography. *Photogrammetric Engineering & Remote Sensing*, 68, 251-255.

Generating forest canopy reflectance. Ramsey III, E., and G. Nelson, in review. A whole image approach for transforming EO1 Hyperion hyperspectral data into highly accurate reflectance data with site-specific measurements.

Generating characteristic Chinese tallow remote sensing spectra. Ramsey III, E., G. Nelson, R. Ehrlich, A. Rangoonwala, and K. Martella, in review. Generation and validation of characteristic spectra from EO1 Hyperion image data for detecting the percent occurrence of invasive species, specifically Chinese tallow.

Mapping the percent occurrence of Chinese tallow and risk to native ecosystems. Ramsey III, E., A. Rangoonwala, G. Nelson, and R. Ehrlich, in review. Mapping the invasive species, Chinese tallow with EO1 satellite Hyperion hyperspectral image data and relating tallow percent occurrences to a classified Landsat Thematic Mapper landcover map.